

Claim 38 (*currently amended*): A holographic image corrector comprising,

- a) an optical system having an objective and an imaging lens,
- b) an array of pinholes mounted before said objective,
- c) means for recording the characteristics of said objective by sending a first laser beam through said array, and through said objective or reflecting said beam therefrom and through said imaging lens to form an object beam and
- d) means for intersecting said object beam with a reference coherent beam in a recording medium to form a hologram thereof that can correct for defects in said objective.

Claim 39 (*currently amended*): A method for objective correction comprising,

- a) recording the characteristics of an optical system having an objective by sending a first laser beam through an array of pinholes and through said objective or reflecting said first beam therefrom and through an imaging lens to form an object beam and
- b) intersecting said object beam with a reference coherent beam in a recording medium to form an interference pattern or hologram thereof that can correct for defects in said objective.

#### REMARKS.

Claims 1 8,12 26 and 29-39 are in the present application. Certain of these claims have been amended, as indicated above, to add the recitation (or equivalent) of "and an imaging lens" after "an objective" and no new matter has been added. That is, Figures 3 and 4 illustrate an objective lens 44 and an imaging lens 46, as original components of the present application.

The Office Action rejection of claims 1, 2, 8, 12, 14, 15-17, 18, 19, 20, 21-26, 29-31, 32 –35, 37, 38 and 39, as obvious under 37 USC 103 (a) over USP 3, 580, 655 to

Leith et al (1971), herein'655, is respectively traversed. The Leith patent discloses the general principle of holographic correction of a lens, that is, a single lens and not a multi-lens system. That is, there is no suggestion of employing two spaced lenses to define a microscope, one of which is holographically corrected to make possible a low cost microscope.

The Office Action recognizes this lack of the above reference on page 3 of the Office Action, noting that Leith does not teach a (corrected) objective in a microscope.

However, the Office Action then proposes that since the method of correcting the aberrations of a lens of Leith is not restricted to a particular optical system, that correcting for a microscope lens (in a system of two or more lenses) is implicitly included so as to render applicant's claimed invention an obvious modification of the Leith system (of one corrected lens).

This appears to be a new type of (and overly broad) obviousness rejection. This would mean that a patent on a general scientific method, "holographic correction of a lens" would rule out later patenting of practical applications of such lens, i.e., of a telescope or a microscope

Also, the above test (if a patent recites a general principle and is not restricted to a particular optical system, that it applies to any future practical application), is contrary to the test for obviousness recited in the MPEP, e. g., section 2143. Here, it is recited that to establish a *prima facie* case of obviousness, three basic criteria must be met.

1. A suggestion or motivation to modify a reference to arrive at the claimed invention,
2. A reasonable expectation of success and
3. The prior art reference must teach or suggest all of the claim limitations.

Such teaching or suggestion must be found in the prior art and not in applicant's disclosure, In re Vaeck, 20 USPQ 2<sup>nd</sup> 1438(1991).

Here, applicant's claims, as amended, recite an objective and an imaging lens structure in applicant's above independent claims. Such corrected lens combination is not suggested in the prior art. Accordingly, applicant's limited application of a holographically corrected microscope is seen as novel and unobvious over the prior art. Note that we are not discussing a mere recitation as to the manner in which an apparatus is intended to be used but an actual recited and un-suggested structural difference between applicant's above amended claims and the single lens structure of the prior art. That is, the above prior art reference does not teach or suggest all the limitations of applicant's above claims.

As to Leith's teaching of a pinhole in his Figure 29, applicant does not claim to have invented the use of a single pinhole and that feature is not relied upon for novelty in applicant's claims. Rather applicant's claims are believed novel for reasons noted above, including that the prior art reference does not teach or suggest all of applicant's other claim limitations, as discussed above.

The Office Action (in mid p.4) points out that the value of a pinhole is, it reduces a light beam to a point light source to more accurately reproduce a corrected image and to

eliminate possible aberration from the light source as the light beam is expanded. True enough. This being the case it is unexpected that an array of pinholes would be useful, as a plurality of light sources would be expected to interfere with each neighboring beam emanating from each point light source. This may indicate why there is a lack of prior art on the subject.

Thus, as to applicant's claimed array of pinholes of claim 21 and later claims, the Office Action admits that no reference has been found to teach such array and falls back on "an obvious matter of design choice", since a single pinhole is known. However, no reference indicates such choice. That is, such array of pinholes has not been seen in prior art lens correction, let alone in a microscope structure, which should highlight the novelty of applicant's claims.

Further, while Leith teaches a pinhole for correction of a single lens, he does not teach correction of a lens in a two or more lens system, let alone for a microscope application.

Also, referring to the above discussion of obviousness, we have seen that a prior art reference must teach or suggest all of the claim limitations per In re Vaeck, supra and, as noted above, there is no such reference.

It is noted that claim 36 is objected to as dependent upon a rejected base claim, but would be allowable if.... Hopefully, claim 36 is now dependent upon a novel base claim, as amended and need not be written in independent form.

Under "Response to Arguments", the Examiner points out that certain features upon which applicant relies, i.e., a microscope with an eyepiece in cooperation with hologram lens correction, was not recited in applicant's previously rejected claims.

However, heeding the Examiner's suggestion, applicant has amended all of the above independent claims to define a microscope having a multi-lens system, an example of which is shown in Figure 4, wherein the resulting image can be viewed by eye or camera.

Thus applicant's claims have been amended to recite novel, useful and specific applications over the generalized holographic principles of the prior art.

In view of the foregoing, the claims of record, as amended, are believed distinguished over the applied art and in condition for allowance.

In accordance with Section 714.01 of the M.P.E.P., the following information is presented in the event that a call may be deemed desirable by the Examiner: Thomas C. Stover, (781) 377-3779.

Respectfully submitted,



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